

Translation

PATENT COOPERATION TREATY

PCT/DE2003/002890



# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference<br>2002P13647WO                                     | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |  |
| International application No.<br>PCT/DE2003/002890  | International filing date (day/month/year)<br>01 September 2003 (01.09.2003)  | Priority date (day/month/year)<br>16 September 2002 (16.09.2002) |
| International Patent Classification (IPC) or national classification and IPC<br>A61B 6/03 |   |  |
| Applicant<br>SIEMENS AKTIENGESELLSCHAFT   |   |  |

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| 1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.  |
| 2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.<br><br><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).<br><br>These annexes consist of a total of <u>3</u> sheets.  |
| 3. This report contains indications relating to the following items:<br><br>I <input checked="" type="checkbox"/> Basis of the report<br>II <input type="checkbox"/> Priority<br>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability<br>IV <input type="checkbox"/> Lack of unity of invention<br>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement<br>VI <input type="checkbox"/> Certain documents cited<br>VII <input type="checkbox"/> Certain defects in the international application<br>VIII <input type="checkbox"/> Certain observations on the international application |

|   |   |
|---|---|
| Date of submission of the demand<br>23 December 2003 (23.12.2003) | Date of completion of this report<br>09 September 2004 (09.09.2004) |
| Name and mailing address of the IPEA/EP<br><br>Facsimile No.      | Authorized officer<br><br>Telephone No.                             |

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
pages \_\_\_\_\_ 1-14 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_ 1-11 \_\_\_\_\_, filed with the letter of \_\_\_\_\_ 13 July 2004 (13.07.2004)
- ☒ the drawings:  
pages \_\_\_\_\_ 1-6 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

|                               |        |      |     |
|-------------------------------|--------|------|-----|
| Novelty (N)                   | Claims | 1-11 | YES |
|                               | Claims |      | NO  |
| Inventive step (IS)           | Claims | 1-11 | YES |
|                               | Claims |      | NO  |
| Industrial applicability (IA) | Claims | 1-11 | YES |
|                               | Claims |      | NO  |

**2. Citations and explanations****1 Reference is made to the following documents:**

D1: US-B2-6 396 902 (BAILEY ERIC M ET AL)  
28 May 2002 (2002-05-28) (mentioned in the  
application)

D2: US-B1-6 449 340 (DUFFY MICHAEL J ET AL)  
10 September 2002 (2002-09-10)

**2 D1, which is considered to represent the closest prior art in relation to the subject matter of claim 1, discloses (the references in parentheses are to this document):**

A process for operating a computed tomography device with an x-ray emitter (92 in figures 3 and 4; column 3, lines 45-58) rotatable about a system axis, with an x-ray detector (98 in figures 3 and 4; column 3, lines 45-58) and with a collimating device (100 in figures 3 and 4) disposed at the x-ray emitter end for variable, that is, interchangeable, limitation of the beam (200 in figure 8; column 4, lines 58-64), said limitation being, however, constant in effect, said device consisting of a curved absorber element (200 in figure 8; column 5, line 39).

- 2.1 The subject matter of claim 1 differs from the process disclosed in D1 in that:

the collimating device consists of absorber plates which are arranged opposite each other and can be adjusted in terms of their mutual spacing independently and dynamically during a spiral scan.

The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

- 2.2 The problem addressed by the present invention may therefore be considered that of providing a process in which the beam of a computed tomography device may be limited dynamically and flexibly, that is, in an intrinsically variable manner, in order to avoid unnecessary irradiation of the patient.

- 2.3 The solution to this problem proposed in claim 1 of the present application involves an inventive step (PCT Article 33(3)). The reasons are:

D2 discloses a flexibly adjustable collimator that likewise consists of two curved absorber plates arranged opposite each other. However, this device serves to collimate an x-ray beam after said beam has passed through the patient and thus solves another problem, namely, that of optimum detector array irradiation.

A person skilled in the art would not arrive at the process as per the invention according to claim 1 by combining the teachings of D1 and D2. Such a

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combination would yield a computed tomography process in which a collimator device as per D2 was arranged at the x-ray emitter end, but which did not suggest dynamic adjustment of said collimator during a spiral scan in order to reduce irradiation of the patient. None of the indicated citations suggests the dynamic adjustment of collimating width during a spiral scan.

- 3      **Claims 2-11 are dependent on claim 1 and therefore likewise meet the PCT requirements for novelty and inventive step.**